Predicting Ventricular Arrhythmia in Acute Myocardial Infarction from Surface ECG

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Introduction: Acute myocardial infarction is associated with ventricular arrhythmia and cardiac arrest. This study was to determine ECG parameters to predict ventricular arrhythmia.

Methods: The clinical data of patients who had been diagnosed with ST elevation myocardial infarction and Non-ST elevation myocardial infarction from 2017-2018 were retrospectively reviewed. All ECG parameters were obtained and analyzed using SPSS 20.0 for univariate, bivariate, multivariate and Receiver Operator Characteristic (ROC) analysis.

Result: A total of 301 patients were included in this study. There were 97 patients who experienced ventricular arrhythmia during hospitalization. From univariate and bivariate analysis, QT dispersion and TpTe were significantly prolonged among cases versus controls (P ≤ 0.05). Cut-off points were determined using ROC curves for QT dispersion (Cut-off > 23.5 ms; AUC 0.644; p< 0.001), QRS duration (Cut-off > 101.3 ms; AUC 0.667; p< 0.001) and TpTe (Cut-off > 122.2 ms; AUC 0.773; p<0.01). After multivariate analysis, three covariates were discovered to be significant with scoring 1 for each covariate: QT dispersion > 23.5 ms, QRS duration > 101.3 ms, and TpTe > 122.2 ms. A score above 1 indicates high risk for emergence of ventricular arrhythmia (AUC: 0.773; p<0.05; Sensitivity 60.9%; Specificity 80%).

Conclusion: ECG Parameter scoring of QT dispersion, QRS duration, and TpTe is reliable, simple clinical prediction rule to indicate risk of ventricular arrhythmia. This CPR might help physicians to prioritize invasive reperfusion strategy.